



The Influence of Personality Traits on the Processing of Visual and Verbal Information

JANE Z. SOJKA

Department of Marketing, Ohio University, Athens, OH 45701-2979

E-mail: sojka@ohiou.edu

JOAN L. GIESE

Department of Marketing, Washington State University, Pullman, WA 99164-4730

E-mail: giese@wsu.edu

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Abstract

The purpose of this research is to investigate individuals' preferences for visual as opposed to verbal information and to explore how those preferences relate to processing style personality traits. In comparison to individuals with other processing style personality traits, individuals with a high need for cognition prefer to process verbal information while individuals with a high need for affect prefer to process visual information. Linking processing style personality traits with preferences for visual/verbal information increases our theoretical understanding and practical applicability of personality traits.

Key words: cognition, affect, visual, verbal, personality, individual traits

Establishing a link between an individual's preference for visual or verbal information with a processing style personality trait adds to our existing knowledge of processing preferences and enhances our understanding and the predictive ability of the personality variable. Consumer researchers have long been intrigued by the concept of personality and its relationship to consumer behavior in part because key personality factors are believed to have persistent influence on perception and behavior (Erikson, 1968; Haugtvedt, Petty, and Cacioppo, 1992). By definition, personality provides consistent responses to environmental stimuli based on enduring psychological characteristics (Kassarjian, 1971). Yet in a review of over 300 personality studies, the impact of personality on consumer behavior was described as ambiguous at best (Kassarjian and Sheffet, 1991). Personality trait theory, however, may show the most promise for the use of personality in consumer research. A trait is a characteristic or individual difference in which one person varies from another in a relatively permanent and consistent way (Mowen and Minor, 1998). Trait theory is important in studying consumer behavior because traits are common to many individuals (Engel, Blackwell, and Miniard, 1995). Furthermore, traits have been found to be particularly useful in consumer research when they have direct relevance to the specific

buying behavior being investigated (e.g., Lichtenstein, Netemeyer, and Burton, 1995; Moore, Harris, and Chen, 1995; Netemeyer, Burton, and Lichtenstein, 1995) or when they are closely linked to theoretical frameworks (Haugtvedt, Petty, and Cacioppo, 1992). Two such traits — need for cognition, and its complement, need for affect — show particular promise for understanding consumer behavior (Giese et al., 1999; Haugtvedt, Petty, and Cacioppo, 1992). By linking individual personality traits to identifiable characteristics such as processing preferences, personality trait theory may become a viable variable for understanding, explaining, and predicting consumer behavior.

One example of a processing preference characteristic is an individual's propensity to process visual information (pictures) as opposed to verbal information (words) (Childers, Houston, and Heckler, 1985). While the basic steps that are used to process information are consistent, the skills, goals, prior knowledge and strategies used in information processing can vary greatly among individuals (Bettman and Park, 1980; Mantel and Kardes, 1999; Pham, 1998; Yoon, 1997). Previous research has suggested that different processing strategies are not evoked on the basis of ability but are evoked on the basis of individual preference (Richardson, 1978). Hence, exposure to the same advertisement results in different levels of attention and subsequent processing, depending upon individual characteristics (Celsi and Olson, 1988). In the case of visual/verbal processing, an individual with a preference for verbal information would process the words in the advertisement while an individual with a preference for visual information would process the pictorial images in the same advertisement. Thus, although exposed to the same ad, individuals would respond differently to the visual and verbal components in the ad based on their preference for visual or verbal information.

Two processing style personality traits — need for cognition and need for affect — are particularly appropriate in terms of understanding how different individuals attend to and interpret the visual/verbal components of an advertising message. The need for cognition and its complement, need for affect, are conceptualized as a reflection of an individual's intrinsic motivation (Cacioppo et al., 1986; Giese et al., 1999). It could be this "intrinsic motivation" that motivates some individuals to process verbal information while others are motivated to process visual information. Given that processing style personality traits have been shown to influence the decision process, type of information used in the decision process, and extent of the information search (Cacioppo et al., 1996; Foxall and Bhate, 1993; Venkatraman et al., 1990), it is reasonable to consider that these same processing style personality traits would also be related to information processing preferences such as preferences toward visual as opposed to verbal information.

The purpose of this research is to examine the correlates of the preference for visual or verbal information. From the practical perspective, if a preference for visual or verbal information is associated with a processing style personality trait, then we know that the visual/verbal preference is relatively stable, and is common to many individuals. This information can be used to help design effective advertisements and packaging labels that are more likely to be processed by certain individuals because the format is consistent with the individual's processing preference. From the theoretical perspective, identifying the correlates of a visual/verbal preference extends our understanding of the role processing style personality traits play in information processing and consumer behavior. Specifically,

previous research has established that individuals with a high need for cognition expend more energy evaluating messages and that they are more likely to evaluate the quality of the argument (Haugtvedt et al., 1988; Haugtvedt, Petty, and Cacioppo, 1992). Likewise, previous research has found that individuals with a high need for affect are more likely to engage in compulsive behavior (Giese and Sojka, 1998). A correlation between processing style personality traits and visual/verbal preferences adds to the growing list of characteristics that are exhibited by individuals with different processing style personality traits and helps build a more complete picture of individuals with a high need for affect and/or a high need for cognition: thus increasing the potential explanatory capabilities of the personality variable that has thus far been of negligible value in consumer research.

1. Conceptual Background

1.1. Need for cognition and need for affect

Need for cognition is an individual's tendency to enjoy thinking (Engel, Blackwell, and Miniard, 1995). Individuals with a high need for cognition intrinsically enjoy the challenge of thinking and report expending more cognitive effort in evaluating messages (Cacioppo and Petty, 1982). The need for cognition is conceptualized as a personality trait in which individuals have not a need per se, but rather have an intrinsic motivation to engage in effortful processing (Haugtvedt, Petty, and Cacioppo, 1992).

Conceptualized as a complementary construct to the need for cognition, need for affect is an individual's tendency to engage in and enjoy processing feelings (Grese et al., 1999). Whereas individuals with a high need for cognition enjoy processing thoughts, individuals with a high need for affect enjoy processing their feelings.

Evidence suggests that the affective and cognitive systems are distinct, yet interactive (Giese et al., 1999; Cacioppo, Gardner, and Berntson, 1999; Sojka and Giese, 1997). Furthermore, Sojka, and Giese (1997) proposed that the relationship between the affective and cognitive systems is an orthogonal one. That is, an individual can have a high need for cognition but a low need for affect (Thinker), a high need for affect but a low need for cognition (Feeler), both a high need for cognition and high need for affect (Combiner), or a low need for cognition and low need for affect (Alternative Processor). The information processing procedure for high need for cognition and high need for affect individuals may be similar; the difference lies in the stimuli they are processing. Thinkers (high need for cognition) are motivated to process thoughts while Feelers (high need for affect) are motivated to process feelings.

Taken together, the need for cognition and need for affect could account for individual differences in processing motivations. Individuals with a high need for cognition are motivated to seek out and decipher cognitive information; while individuals with a high need for affect are motivated to seek out and decipher affective information. It is these varying "processing motivations" which, consistent with information processing theory, could account for individual differences in preferences for visual or verbal information.

1.2. Visual and verbal information

For the purposes of this research, information is conceptualized as stimuli data that can be presented in both verbal (words) or visual (pictures) form. It is not the data itself, but rather the processing preferences of the individual which determine the level of interpretation that will occur. Most people are adept at interpreting the verbal information contained in words because language skills are acquired, taught, and reinforced at an early age and are essential for survival in society.

For individuals who have the capabilities and motivations to interpret it, visual stimuli may contain amounts of information equivalent to that which is conveyed in a verbal format. Indeed, McQuarrie and Mick (1992) lamented that “aspects of an ad that do not directly transmit brand-relevant information using rational arguments tend to be lumped together as peripheral cues, a catchall category in need of more refined theoretical differentiation” (p. 195). In fact, rhetorical analysis suggests that visual elements contain connotative and denotative systems that convey meanings equally rich as formal language systems (Scott, 1994). Processing of visual information has been found to influence the formation of product attribute beliefs, the attitude toward the advertisement, and the consumer information acquisition process (Childers, Houston, and Heckler, 1985; Mitchell, 1986). Hence, visual information can impact the decision process in much the same way that verbal information impacts the decision process.

The process used in interpreting visual information may imitate the process used to interpret verbal information. The term “visual attention,” which is used to describe the process by which visual stimuli (as opposed to auditory stimuli or tactile stimuli) is prioritized for processing, does not specify between visual or verbal stimuli, suggesting that the process used is similar regardless of the stimuli (Deubel and Schneider, 1993). In addition, responses to visual overload are similar to responses to information overload. Macklin (1996) found that extensive visual cues may overtax processing abilities in much the same way that information overload has been found to interfere with cognitive processing. Furthermore, just as resonance ads (such as an ad for teacups saying “get yourself into a lot of hot water”) require additional cognitive processing because of the apparent negative connotation of hot water versus the positive attributes of a tea cup (McQuarrie and Mick, 1992), an unfinished or cropped picture requires additional processing because of the imposition of unfamiliarity. When shown an incomplete or ambiguous photograph, subjects “closed” the photos and reported higher levels of affect towards the ad (Peracchio and Meyers-Levy, 1994). Researchers concluded that for individuals who were sufficiently motivated to complete the cropped picture, product evaluations were enhanced. In this case, the process of completing the cropped picture would be analogous to untangling figures of rhetoric in advertising language.

Even color can convey meaning to individuals motivated to process it. Meyers-Levy and Peracchio (1995) found that individuals who were highly motivated to substantiate an advertisement used color as part of the evaluation process. If the colors imparted information consistent with the advertisement’s claims, attitudes were enhanced. This process is similar to one of counterarguing with cognitive information. If an advertisement presents believable cognitive information, there is less chance for counterarguing and

increased probability of message acceptance (Engel, Blackwell, and Miniard, 1995). Clearly, for some individuals, visual stimuli contains information suitable for decision processing.

2. Hypotheses

When exposed to identical stimuli, individuals decipher different information from the same source. Celsi and Olson (1988) found distinct differences in attention to advertising among consumers suggesting that different segments of consumers may respond differently to the same ad. Furthermore, Rosbergen, Pieters, and Wedel (1997) documented segments of consumers with differing patterns of visual attention, supporting the concept that it is not the stimulus alone which determines attention or subsequent processing but rather an interaction between the stimulus and consumer. Attracting attention to an ad and thereby increasing subsequent processing of that ad becomes an issue of matching consumer characteristics (need for cognition/need for affect) with the message format (verbal/visual).

Based upon an individual's personality processing trait (need for cognition or need for affect), different types of information will be sought out and used for processing purposes. Individuals with a high need for cognition have been shown to be more likely influenced by the quality of arguments in the ad than individuals low in their need for cognition (Haugtvedt, Petty, and Cacioppo, 1992). This has led to the conclusion that individuals with a high need for cognition may rely more on newspapers and prefer longer ads with more verbal information than individuals with a low need for cognition. Given that individuals with a high need for cognition but low need for affect (Thinkers) are attracted to information that allows and even encourages them to think, it is reasonable to assume that they would be particularly attracted to and motivated to process verbal components of an advertising message.

It is also reasonable to suggest that individuals with a low need for cognition but high need for affect (Feelers) seek out and attend to visual information because it offers the affective information they prefer to process. Whereas the rhetoric contained in the visual elements may go unprocessed or be processed peripherally by individuals with a high need for cognition, individuals with a high need for affect may be attuned to the meanings conveyed in the visual elements and may process them with the same vigor as individuals with a high need for cognition process verbal information. Therefore, the following hypotheses are proposed.

H1: Individuals with a high need for cognition and low need for affect (Thinkers) will express a greater preference for verbal information than individuals with a high need for affect and low need for cognition (Feelers).

H2: Individuals with a high need for affect and low need for cognition (Feelers) will express a greater preference for visual information than individuals with a high need for cognition and low need for affect (Thinkers).

In addition, determining if Combiners and Alternative Processors have a preference for visual or verbal information will also be explored. Because Combiners have both a high need for affect as well as a high need for cognition, they should be equally comfortable processing both visual and verbal information. Likewise, Alternative Processors have neither a high need for cognition nor a high need for affect; at present, it is unclear what processing style they are using. What is clear, however, is that Alternative Processors should respond differently than Thinkers, Feelers, or Combiners to visual and verbal information. While inappropriate to test as formal hypotheses due to a lack of theoretical support, the visual/verbal preference for Combiners and Alternative Processors is included in this study.

3. Method

3.1. Sample

Three hundred seventy students from a large northwestern university participated in the study. Two respondents were deleted for providing incomplete data. The sample consisted of 63% males and 37% females. Of the total sample population, 97.3% were classified as undergraduates and 83.4% were born in the United States. Respondents agreed to voluntary participation by signing a Statement of Informed Consent. In addition, all responses were anonymous.

3.2. Survey instrument

A 13-page survey consisting of nine measures and demographics was administered. Three measures are described in the next section; six measures were administered for another study. Determination of processing style was based on responses to the Need for Cognition (Cacioppo, Petty, and Kao, 1984) and Need for Affect (Giese et al., 1999) scales; therefore, these scale items were interspersed together and were always first on the survey. All other scales pertinent to this study were counterbalanced to reduce fatigue and order biases.

3.3. Measures

To test for preferences toward verbal or visual information, the Style of Processing scale developed by Childers, Houston, and Heckler (1985) was used. Style of processing (verbal/visual processing) was conceptualized as a propensity to engage in a verbal and/or visual modality of processing; this scale was designed to measure an individual's preference for processing verbal information or visual information. A 22-item, four-point Likert scale, the verbal/visual processing style scale exhibited high reliability in previous use (coefficient $\alpha = .88$) (Childers, Houston, and Heckler, 1985). For the purposes of this study, the scale was used in its 22-item combined form, as well as

separated into the visual subscale (11 items) and the verbal subscale (11 items). In the combined form, high scores indicate a preference for processing visual information; low scores indicate a preference for processing verbal information. When separated, the verbal subscale was recorded so that high values suggest a high propensity to engage in verbal processing; likewise, but without additional recording, high scores on the visual subscale suggest a propensity towards processing visual information.

Processing style was assessed using the Need for Cognition (Cacioppo, Petty, and Kao, 1984) and Need for Affect (Giese et al., 1999) scales. An 18-item, nine-point Likert scale, the Need for Cognition scale (Cacioppo, Petty, and Kao, 1984) measures the extent to which the individuals seek out and use cognitive information for decision processing across all situations. Previous testing indicated that coefficient alpha for this scale was .85 (Sojka and Giese, 1997). The Need for Affect scale was developed as a situation-invariant affective processing scale analogous to the Need for Cognition scale. This 11-item, nine-point Likert scale had previously yielded a coefficient alpha of .87 (Sojka and Giese, 1997).

4. Results

4.1. Preliminary analysis

Table 1 reports the means, standard deviations, and the coefficient alphas for each scale used to determine processing style personality trait (Need for Cognition and Need for Affect) and preference for verbal/visual information. As expected, there was a significant negative correlation between Need for Cognition and Style of Processing (visual/verbal combined) ($r = -.24$; $p = .00$) and a significant positive correlation between Need for Affect and Style of Processing ($r = .12$; $p = .03$). There were also significant correlations between Need for Affect and visual processing ($r = .285$; $p = .00$), as well as between Need for Cognition and verbal processing ($r = .41$; $p = .00$). Unexpectedly, there was also a significant correlation between Need for Affect and verbal processing ($r = .13$; $p = .01$). No significant correlations were evident between Need for Cognition and visual processing ($r = .05$; $p = .38$) nor between the visual and verbal processing subscales ($r = -.03$; $p = .62$). Furthermore, there was no significant correlation between the Need for Cognition scale and the Need for Affect scale ($r = -.045$; $p = .39$).

To determine the processing style personality trait, individuals were grouped into one of four categories: Thinkers—high need for cognition, low need for affect; Feelers—high

Table 1. Means Standard Deviations, and Reliability Results for Scales

Scale	Mean	Standard Deviation	Coefficient Alpha
Need for Cognition	104.97	18.43	.83
Need for Affect	67.11	16.74	.90
Style of Processing (combined)	58.30	5.67	.67
Visual Processing (subscale)	33.09	4.20	.72
Verbal Processing (subscale)	29.81	3.95	.71

need for affect, low need for cognition; Combiners—high need for cognition and high need for affect; and Alternatives—low need for cognition and low need for affect. Categories were determined using the median split of actual scores on the Need for Cognition (median = 105) and Need for Affect (median = 70) scales.

Gender was tested as a potential covariate. Gender was not a significant covariate when using the Style of Processing combined scale as the dependent variable ($F_{(1,367)} = .55$; $p = .46$). However, using the verbal subscale as the dependent variable, gender was a significant covariate ($F_{(1,367)} = 10.29$; $p = .001$) and, using the visual subscale as the dependent variable, gender was a marginally significant covariate ($F_{(1,367)} = 3.42$; $p = .065$). There was no factor by covariate interaction in either case ($p = .91$ and $.315$ respectively). Therefore, when analyzing the separate visual and verbal subscales, gender was used as a covariate.

4.2. Thinkers and verbal information

Hypothesis 1 was supported in this study. Using the Style of Processing combined scale as the dependent variable, analysis of variance results revealed a significant main effect of processing style personality type ($F_{(3,367)} = 5.31$; $p = .001$; partial $\eta^2 = .04$). Using the verbal processing subscale as the dependent variable, results indicated a significant main effect of processing style personality type ($F_{(3,367)} = 16.575$; $p = .00$; partial $\eta^2 = .12$). Specifically, Thinkers demonstrated a propensity to vary from Feelers in their preference for verbal information (adjusted means = 30.67 and 29.24 respectively; $p = .01$). (See Table 2 for planned comparison results and Figures 1 and 2 for graphical representation of means.)

4.3. Feelers and visual information

Hypothesis 2 was supported by the data. As reported above, there was a significant main effect of processing style personality type on style of processing (visual/verbal combined scale). Using the visual subscale as the dependent variable, analysis of variance results also suggested a main effect of processing style personality type in preference for visual information ($F_{(3,367)} = 9.37$; $p = .00$; partial $\eta^2 = .07$). As hypothesized, a significant difference was found between Feelers and Thinkers in terms of their preference for visual information (adjusted means = 33.67 and 31.98 respectively; $p = .01$). (Again, please see Table 2 and Figures 1 and 2.)

4.4. Further analysis

Although no specific hypotheses were developed, further analysis suggested interesting differences between Combiners, Feelers, Thinkers, and Alternatives. Using the Style of Processing combined scale, Thinkers demonstrated a significantly greater propensity to

Table 2. Planned Comparisons

	n	Mean	Feelers	Thinkers	Alternatives
<i>Style of Processing^a</i>					
Combiners ^c	92	58.24	p = .17	p = .03	p = .27
Feelers ^d	88	59.37		p = .00	p = .78
Thinkers ^e	90	56.40			p = .00
Alternatives ^f	98	59.14			
<i>Verbal Processing^b</i>					
Combiners ^c	92	31.42	p = .00	p = .17	p = .00
Feelers ^d	88	29.24		p = .01	p = .02
Thinkers ^e	90	30.67			p = .00
Alternatives ^f	98	27.89			
<i>Visual Processing^b</i>					
Combiners ^c	92	34.71	p = .09	p = .00	p = .00
Feelers ^d	88	33.67		p = .01	p = .01
Thinkers ^e	90	31.98			p = .86
Alternatives ^f	98	32.09			

^aCombined Visual/Verbal Scale^bSubscale; Analyzed Using Gender as a Covariate^cCombiners = High Need for Cognition/High Need for Affect^dFeelers = Low Need for Cognition/High Need for Affect^eThinkers = High Need for Cognition/Low Need for Affect^fAlternatives = Low Need for Cognition/Low Need for Affect

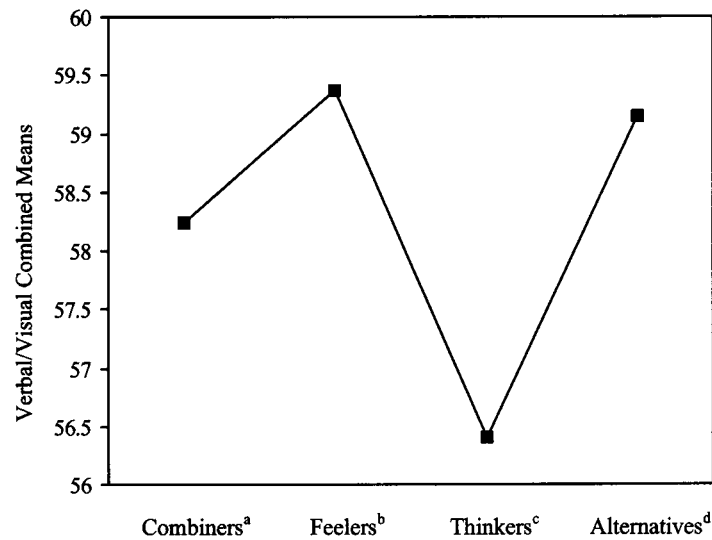
process verbal information than any of the other processing personality types. There were no significant differences between Combiners, Feelers, and Alternatives using the combined scale as the dependent variable. (See Table 2 and Figure 1.)

Insightful differences were evident when analyzing the verbal processing subscale. Planned comparisons revealed significant differences between Combiners and Feelers, as well as Thinkers and Feelers. There was no significant difference between Combiners and Thinkers. In addition, Combiners, Feelers, and Thinkers were all significantly different from Alternatives. (See Table 2 and Figure 2.)

Planned comparisons indicated that Combiners have a greater preference towards visual information (using the visual subscale) than Thinkers or Alternatives and that Feelers have a greater preference towards visual information than Thinkers and Alternatives. In addition, there is a marginally significant difference between Combiners and Feelers. Interestingly, there is no significant difference between Thinkers and Alternatives in their preference for visual information. (Again, see Table 2 and Figure 2.)

5. Discussion and Conclusions

These results suggest a compelling relationship between processing style personality traits and a preference for processing visual or verbal information. Specifically, these results suggest that individuals with different processing style personality traits prefer to process



^a Combiners = High Need for Cognition/High Need for Affect

^b Feelers = Low Need for Cognition/High Need for Affect

^c Thinkers = High Need for Cognition/Low Need for Affect

^d Alternatives = Low Need for Cognition/Low Need for Affect

Figure 1.

different types of information. In comparison to individuals with other processing style personality traits, individuals with a high need for cognition but a low need for affect (Thinkers), prefer processing verbal information. In comparison to individuals with other processing style personality traits, individuals with a high need for affect but low need for cognition (Feelers) prefer processing visual information.

Although not hypothesized, further examination of the data revealed an interesting pattern of preferences for visual or verbal information for Combiners: individuals who have a high need for affect and a high need for cognition. In comparison to Feelers or Alternatives (who share a low need for cognition), Combiners prefer processing verbal information which is consistent with their high need for cognition. However, in comparison to Thinkers or Alternatives (who share a low need for affect), Combiners are more likely to process visual information which is consistent with their high need for affect. In a sense, when it comes to processing visual or verbal information, it initially appears that Combiners can act “androgynously”; they can choose to process either verbal or visual information depending upon which is presented because they have both a high need for cognition and a high need for affect. These findings support previous research suggesting

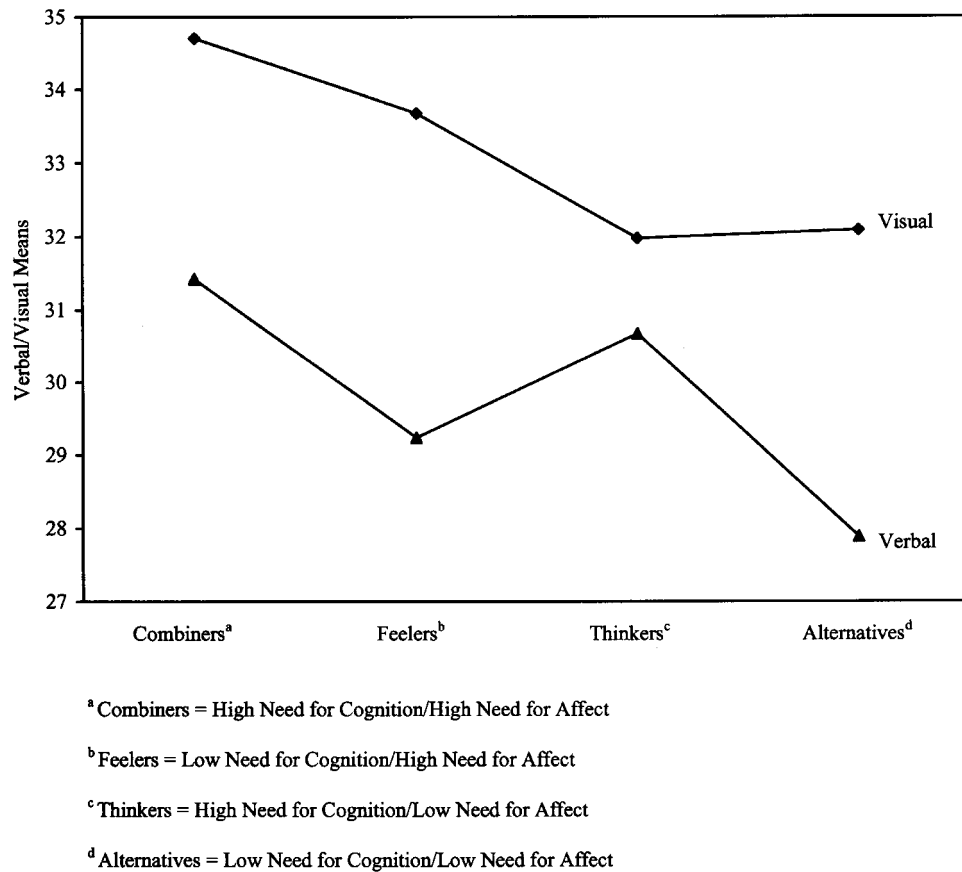


Figure 2.

that the affective and cognitive systems can be interactive (Burke and Edell, 1989; Cacioppo, Gardner and Bernston, 1999; Kahn and Isen, 1993; Munch, Boller, and Swasy, 1993).

In addition, Alternatives (low need for cognition and low need for affect) appear to be least likely to process verbal information. Feelers, who, like Alternatives, also have a low need for cognition, process verbal information more than Alternatives process verbal information. Thinkers, who share a low need for affect with Alternatives, respond similarly in their propensity to process visual information. Taken together, these relationships between the processing style personality traits—need for cognition and need for affect—with the type of information preference—verbal or visual—have both practical and theoretical implications.

For marketing practitioners, the vast number of advertising exposures means that the competition between ads for consumer attention is intense (Rossiter and Percy, 1983). It is

therefore critical that marketers use an advertising format most likely to be processed by the intended audience. Our research suggests that in terms of creating a visual or verbal ad, “one size does not fit all”; that is to say, individuals with different personality processing traits will be motivated to process different types of advertisements. Consistent with previous research, these results suggest that individuals with a high need for cognition (Thinkers) will be drawn to information presented in a verbal form (Venkatraman et al., 1990). However, visual information is more likely to be effective than verbal information in reaching individuals with a high need for affect (Feelers). The results of this research suggest that to truly reach all customers, advertisers should prepare two versions of the same message: a verbal version which will be processed by individuals with a high need for cognition and a visual version which will be processed by individuals with a high need for affect. Preparing equivalent visual/verbal ads, however, may be easier said than done. Additional research is needed to determine how to accurately encode identical messages using words or pictures.

The results of this research also hold practical implications for package designs. The limited space available on a package necessitates that marketers use the space efficiently. While verbal messages such as the product name, and, as in the case of food, nutritional information, are necessary, it may be more advantageous to use visuals on the package front. We know that individuals with a high need for affect prefer visual information; we also know that they are more likely to engage in compulsive behavior (Giese and Sojka, 1998). Given that many in-store retail purchases are likely to be impulsive (Agnew, 1987), or, at the very least, the decision to purchase is made in-store, visual pictures on packages may particularly appeal to the individuals most likely to engage in impulse buying: those individuals with a high need for affect. Consequently, visual elements on package fronts may encourage impulse purchasing.

From the theoretical standpoint, according to Haugtvedt, Petty, and Cacioppo (1992), personality traits are most useful to consumer researchers when “they are carefully linked to processes specified by theoretical frameworks” (p. 257). In this sense, the value in this research lies in the theoretical issues that it raises. While we now know that individuals with a high need for cognition prefer to process verbal information and individuals with a high need for affect prefer to process visual information, we do not know how they process that information. While previous research suggests that individuals with a high need for cognition use a detailed, attribute-based processing approach (Mantel and Kardes, 1999), affect theory suggests that individuals with a high need for affect might use a different processing style to decipher visual ads. Affect tends to be holistic (Zajonc, 1980) which suggests that a more generalized, attitude-based processing strategy might be used. Furthermore, work in hemisphere lateralization has found that different sides of the brain are used to process visual information or verbal information (Janiszewski, 1988). What we don’t know is if the process is different or similar; i.e., is visual information processed in the same manner as verbal information or is it processed differently? In addition, research is needed to determine the role of personality processing traits in determining the preferred processing strategy. For example, can an individual with a high need for cognition use a detailed, attribute-based processing approach to decipher a visual ad and if so, what is the impact on the message received? In contrast, can an individual

with a high need for affect use a more generalized, attitude-based processing strategy to decipher a verbal ad and how does this impact the received message? Or, does the stimuli drive the processing strategy choice? That is, will all individuals use a generalized, attitude-based processing strategy to decipher visual information but messages received will vary because some individuals (high need for affect) are more competent at using a generalized, attitude-based processing strategy than other individuals (high need for cognition)? Exploring these questions ties personality traits to information processing theoretical frameworks which, as Haugtvedt, Petty, and Cacioppo (1992) note, is necessary if personality traits are to be of use to consumer researchers.

Another interesting research question concerns the combination processors. While our results suggest that they are comfortable processing either visual or verbal information, the situation and circumstances that will influence which type of stimuli they would choose to process has yet to be explored. Perhaps Combiners are similar to androgynous individuals who adapt their gender behavior based on situational influences (Bem, 1974). But what are those situational influences? Can the situational influences be marketer-controlled? Is there an advantage to either cognitive-based processing or affect-based processing?

Furthermore, what happens in the case of a “mixed” message such as an emotional, verbal appeal? The verbal component suggests that the individual’s high need for cognition will process the information cognitively, yet the emotional element suggests that the individual’s high need for affect will process the feelings imbedded in the information. Will one “need” dominate the other or will they share in the processing of the information? Likewise, what will happen in the case of a visual, rational appeal? In addition, since these individuals can process both visual and verbal information by virtue of their high need for both affect and cognition, are they particularly susceptible to sensory overload? If cognitive overload leads to affect referral heuristic (Wright, 1975), does sensory overload lead to peripheral processing; i.e., because there is simply too much cognitive and affective information to process, the individual chooses not to process any of it and instead relies on peripheral cues? These questions directly relate to theoretical issues surrounding the affect and cognitive systems and how they interact. Understanding more about Combiners, the information they seek and the process they use, will increase our understanding of the affect and cognitive systems, their interaction and their relationship with other information processing constructs.

Finally, this research raises interesting questions in terms of extending Petty and Cacioppo’s (1986) Elaboration Likelihood Model (ELM). Because need for cognition and need for affect were developed to account for individual differences in processing motivations, they have the “potential to serve as an operationalization of the motivational component of ELM” (Haugtvedt, Petty, and Cacioppo, 1992, p. 241). According to the ELM, attitude change via the central route is likely when individuals possess both the “motivation and ability to evaluate message arguments thoughtfully” (Haugtvedt, Petty, and Cacioppo, 1992, p. 241) as would be the case for individuals with either a high need for cognition, a high need for affect, or both. Petty, Cacioppo, and Kasmer (1988) used a skiing example to illustrate the role of affect in the ELM. Two people are exposed to an advertisement about a skiing vacation in Colorado. Person A sees the visual elements in the ad and imagines the exhilarating feeling of experiencing the crisp white powder as

he/she rushes down the slope on a beautiful sun-filled day while Person B evaluates the cost of a ski vacation relative to other alternative vacation sites. Because each person has engaged in considerable processing to evaluate the merits of a ski vacation, according to the ELM, these attitudes are formed via the central route (Petty, Cacioppo, and Kasmer, 1988). Yet, measuring only need for cognition may not be able to detect the effortful processing by Person A. Assuming situational factors such as involvement are held constant, according to the ELM, Person B is motivated to engage in rational, cognitive processing, because he/she has a high need for cognition (Petty, Cacioppo, and Kasmer, 1988). But person A is also engaged in effortful processing of the ski vacation. Again, assuming situational factors remain constant across individuals, if Person A is a Combiner, his/her high need for cognition will confirm central processing. However, Person A might be a Feeler with a low need for cognition but a high need for affect suggesting attitude change via the central route without a high need for cognition. Furthermore, Person C might report a favorable attitude toward a Colorado ski vacation because the scenery is beautiful. Unlike Person A, for whom the visual elements served as an argument resulting in central processing, for Person C, the visuals serve as a peripheral cue that produced a positive evaluation without extensive processing (Petty, Cacioppo, and Kasmer, 1988). Including need for affect as another motivator toward central processing helps explain why, for some people, a picture is worth a thousand words; they have a high need for affect and they process visual elements using the central route.

This study was designed to explore the association between two processing style personality traits, the need for cognition and the need for affect, and a preference for visual or verbal information. As hypothesized, a relationship between individuals with a high need for cognition and a preference for verbal information was supported. But even more important, a correlation between individuals with a high preference for affect and a preference for visual information was also supported by the data. These results suggest that the type of information processed is related to an individual's processing style personality trait. Clearly additional research investigating processing style personality traits—the need for cognition and the need for affect—and their relationship with information processing merits further consideration.

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